Day : Thursday
Date: 11/9/2006
Time: 15:28:50

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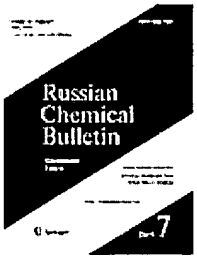
6287341 w/d due to Rest. of method of prep. and implanting.

6134578 method of prep.

HA not necessarily in stoichiometric proportion.

Journal Article



Mechanism of solid-state conversion of non-stoichiometric hydroxyapatite to diphase calcium phosphate

Journal Russian Chemical Bulletin
Publisher Springer New York
ISSN 1066-5285 (Print) 1573-9171 (Online)
Subject Chemistry and Materials Science and Russian Library of Science
Issue Volume 52, Number 11 / November, 2003
DOI 10.1023/B:RUCB.0000012357.20616.15
Pages 2369-2375
Online Date Wednesday, November 03, 2004

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Abstract Two non-stoichiometric hydroxyapatites (n-HA) with Ca/P molar ratios of 1.50 and 1.58 and one stoichiometric hydroxyapatite (s-HA) with Ca/P = 1.67 were prepared from chemically pure $CaHPO_4 \cdot 2H_2O$ and KOH. After sintering at 1050 °C for 4 h, n-HA with Ca/P = 1.50 was transformed into β-$Ca_3(PO_4)_2$, n-HA with Ca/P = 1.58 was converted to diphase calcium phosphate (DCP), while s-HA underwent no chemical transformations. The sintered and unsintered samples of hydroxyapatite were studied by IR spectroscopy, chemical analysis,

and X-ray diffraction analysis. The crystallite dimensions were calculated, and a model for the DCP structure was proposed. The mechanism of the solid-state n-HA to DCP conversion was proposed on the basis of this model and published values of the volume diffusion coefficients of the OH^-, Ca^{2+}, and PO_4^{3-} ions at 1000 °C.

hydroxyapatite - calcium phosphate - solid-state reactions - X-ray diffraction analysis - IR spectroscopy

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